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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY

FOREST INSECT INVESTIGATIONS

1933 FOREST INSECT SURVEY  
TARCHEE NATIONAL FOREST

by  
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Forest Insect Field Station,  
Coeur d'Alene, Idaho,  
Nov. 20, 1933.



## INTRODUCTION

Investigations conducted during June showed a heavy mortality of the overwintering broods of the mountain pine beetle throughout the Beaverhead National Forest. This mortality was assumed to have resulted from the extremely low temperatures which occurred in December 1932, and again in February 1933. As it was felt that this mortality might make the reopening of the entire Yellowstone bark-beetle control project a feasible procedure, plans were made to determine the extent of this mortality as well as the status of the 1933 attack in the forests adjacent to the Yellowstone. In accordance with this plan an insect survey of the Targhee National Forest was conducted during September and October, under a cooperative agreement between the U. S. Forest Service of Region 4 and the Bureau of Entomology, Coeur d'Alene, Idaho. The area surveyed was practically the same as covered in 1931 and 1932, and extended from the middle fork of Indian Creek north and east to the east fork of Hotel Creek, including the area in Montana between the Centennial Valley and the Continental Divide, then south and east from Sheridan Creek to Yellowstone National Park and south of Yellowstone National Park to Coyote Meadows, or a total of about <sup>464,000</sup>~~441,000~~ acres. Approximately one and one-half ~~per~~ cent of this area was covered during this survey by a crew of three field assistants and a cook-camp mover, who systematically gridironed the region by sample strips one chain in width.

To determine the extent of the mortality to overwintering broods of the mountain pine beetle, a total of 414 - 1932-attacked trees were

examined during this survey throughout the northern half of the forest. Of these 414 trees, 59 per cent or 245 trees showed a complete mortality, while 41 per cent or 169 trees showed what was assumed to be a normal emergence. Regardless of this 59 per cent mortality in the overwintering brood, the estimate of subsequent 1933 attacks showed an increase of 74 per cent over the estimate for 1932. Examination of 1933-attacked trees gives no indication of other than a normal infestation. There occurred approximately the same ratio of pitched out, one-sided, light and heavy attacks, with the majority of the attacks heavy as in former years.

The north half of the Targhee National Forest, or the area covered by this reconnaissance, is divided into two rather distinct topographical areas. In the Continental Divide area there are stands of both whitebark pine and lodgepole pine, with the heaviest infestation in whitebark pine. A total of 23,161 infested trees has been estimated for this area.

The second area, lying to the south of Buffalo River, has a continuous lodgepole pine stand varying from reproduction to overmature timber, with a large per cent of the stand mature. Throughout this area there is a very heavy infestation - an estimated total of <sup>303,188</sup>~~274,374~~ infested trees. In a heavy infestation of this character, with the majority of the stand mature, conditions would seem to be favorable for rapid increase in the number of infested trees.

## UNIT DESCRIPTIONS

### Unit #1

This unit of 43 sections was partly treated in 1930 and 1931. This season's data show a slight increase in the number of infested trees per acre from .651 in 1932 to .769 in 1933. The infested trees were evenly distributed in 1931; in 1932 three heavy centers of infestation developed and from these three centers the 1933 infestation has spread over the entire unit. The infested trees occur in fairly large groups; eight groups of ten or more infested trees were located during the survey, the largest group containing fifteen infested trees.

### Unit #2

This large unit of 83.5 sections consists of the area south of Partridge Creek, between Warm River and Yellowstone National Park, the north boundary being the limit of the infested area. To cover all of the infested area it was necessary to extend the northern boundary two and one-half miles further north. With the exception of an area of fourteen sections at the head of Fish Creek, where the infestation is very light, the infestation is evenly distributed. This year's data show an increase from .570 infested trees per acre in 1932 to .955 in 1933, with an average of 611 trees per section. The infested trees occur in fairly large groups, as eleven groups of ten or more trees were located during the survey, the largest containing forty trees. There are 14 sections at the head of Fish Creek, where the infestation is so light that control measures would not be necessary.

### Unit #3

There are some 68 sections in the unit lying between Snake River and Warm River, south of the Osborne-Eccles road. The only control work previously conducted in this unit was a small area treated in Bear Gulch in 1931. With the exception of about eight sections, parallel to the north boundary, where control would not be necessary, the infested trees are distributed evenly throughout the entire unit. There is an increase in the infestation from .294 trees per acre in 1932 to .594 in 1933. The infested trees occur in small groups, only one group of ten infested trees being located during the survey.

### Unit #4

This unit lies west of Snake River, between Lookout Butte and Big Bend Ridge, and contains some 44 sections. There is a heavy infestation extending from the Big Falls of Snake River to Big Bend Ridge. The infested trees occur in large groups, fourteen groups of ten or more infested trees being located during the survey; the largest consisted of 37 trees. North of this heavily infested area to the boundary between Units #4 and #5 the infestation is light, occurring only as singles and very small groups. There is an increase from .459 infested trees per acre in 1932 to 1.305 in 1933, or an average of 839 infested trees per section. With the exception of about five sections located near Lookout Butte, the entire area would need be treated if control is instituted.

#### Unit #5

This unit includes the large area west from Snake River to Antelope Flat, north from Lookout Butte to Bishop Mountain and the Railroad road ranch-Harriman ranch road, which contains approximately 76 sections. The heaviest centers of infestation in this unit were treated in 1931. West of the Elk Wallow-Highpoint Lookout-Sheridan Creek road, this year's infestation is very heavy, the infested trees occurring in large groups varying from 10 to 40 trees. Though this infestation is the heaviest on the forest, to the east of the Elk Wallow-Highpoint Lookout-Sheridan road the infestation is lighter, with infested trees occurring as singles or in small groups. There is an increase in the number of trees per acre from .797 in 1932 to 1.446 in 1933, with an average of 927 infested trees per section.

#### Unit #5A

This unit lies between the Railroad ranch-Harriman ranch road and Rea, west of Snake River. Though within this area the 1933-attacked trees occur as single trees or in very small groups, the data secured show an increase from .054 infested trees per acre in 1932 to .174 in 1933.

#### Unit #6

This unit lies between Bishop Mountain and the Davis Lake road. Though the data secured indicate a total of 10,258 trees was estimated for the area, it is believed that this figure is high. The per cent of the area covered was not only too small but was not a representative

sample of the unit. If control measures are instituted in this general area, an additional reconnaissance should be made of this unit before any action is taken. Apparently a heavy infestation is present in the southern portion of this unit.

#### Unit #7

This unit lies to the west of Hotel Creek, and extends to the ridge east of Ching Creek, and includes the area listed in 1932 as Unit 7A, which is located outside of the forest along Antelope Ridge. A very light infestation is distributed evenly throughout this unit, with infested trees occurring as singles or small groups. Though the infestation in this unit is not heavy, the 1933 attacks indicate .151 trees per acre as against .05 in 1932.

#### Unit #8

This unit includes the heads of Odell, Shambo and Toms Creeks on the Montana side of the Continental Divide, and is composed of two distinct timber types, lodgepole pine and whitebark pine. The infestation in the lodgepole pine is very light, with infested trees occurring singly or in very small groups. In the whitebark pine the infestation is heavier, with groups of twelve and twenty-one infested trees being located during the survey. This season's data show an increase in the infestation from .09 infested trees per acre in 1932 to .215 in 1933. There is an average of some 138 infested trees per section over some 43 sections.



#### Unit #9

In this unit, consisting of the Ching, Cottonwood, and lower East Camas Creeks drainage, a narrow strip of timber on East Camas and Cottonwood Creeks was treated in 1931. Though at this time the infested trees are scattered throughout the entire unit as singles or small groups, the data secured indicate a reduction in the infestation from .220 trees per acre in 1932 to .158 in 1933.

#### Unit #10

This unit consists of the West Camas Creek watershed. Parts of Allen Canyon, Steel Creek, and an area north of Frazier dam were covered by control in 1931. In this unit there are two centers of heavy infestation, one, south of Frazier Dam and the other near the head of West Camas Creek. In these two areas the infestation occurs as single trees and small groups. In the remainder of the area the infestation is very light, with only a few scattered trees being recorded. The data secured show an increase in the infestation, with .17 infested trees per acre in 1932, and .304 in 1933.

#### Unit #11

This unit consists of the Corral, Sand, Price, and Pete Creek drainages, and the area north of Table Mountain, all of which are on the Montana side of the Continental Divide. In this unit there is a lodge-pole pine-Douglas fir type, and a subalpine type consisting of whitebark pine, Douglas fir, Alpine fir, and spruce. In both of these types the infestation is decreasing, with infested trees distributed throughout the area as singles or in very small groups. There is a decrease from .29 infested trees per acre in 1932 to .156 infested trees per acre in 1933.



#### Unit #12

This unit, known as Table Mountain, includes but five sections, which were covered by control in 1931. Along the Continental Divide in the pure whitebark pine stands there is a heavy infestation, with the infested trees occurring in fairly large groups, the largest consisting of nineteen infested trees. Though in the remainder of the area the infestation is very light, there is an increase from .11 infested trees per acre in 1932 to .500 in 1933. The infestation averages 320 trees per section.

#### Unit #13

This unit of 7.5 sections consists of the Rattlesnake Creek watershed, and was treated in 1930 and 1931. The infestation occurs in fairly large groups evenly distributed throughout the unit, the largest group consisting of sixteen infested trees. The data show an increase from .06 infested trees per acre in 1932 to .702, or 449 trees per section, in 1933. As the 1932 survey indicated a concentrated infestation in one small portion of this unit, this section was eliminated and considered as a separate unit at that time. However, as this season's data did not show the need for such action, unit #13B has been considered as a part of the original #13 unit.

#### Unit #14

This unit of 26 sections, which includes all of the forest west of the Spencer-Continental Divide road, was treated in 1930 and 1931. Throughout this unit the timber occurs in patches of both lodgepole pine and whitebark pine, with about the same amount of infestation in

each. Though the infested trees are scattered, they occur in fairly large groups containing as many as 25 infested trees. Though the number of 1933-attacked trees per acre is practically the same as in 1931, there is an increase from .058 infested trees per acre in 1932 to .212 in 1933, with an average of 135 trees per section.

#### Unit #15

This unit of 16 sections, which lies to the north of Fall River and extends to the south boundary of the Yellowstone National Park and west to Little Robinson Creek, was covered by control in 1931. The infested trees are rather evenly distributed, occurring as singles or in small groups. This year's data show an increase from .360 infested trees per acre in 1932 to .609 in 1933, with an average of 391 trees per section.

#### Unit #16

This unit of 30 sections is the area between Robinson Creek and Fall River which had not been previously treated. The infestation is evenly distributed, and occurs in large groups of ten to forty-eight trees. There is an increase in this year's infestation from 1.206 infested trees per acre in 1932 to 1.368 in 1933, with an average of 880 per section.

#### Unit #17

This large unit of 69.5 sections is the area between Fall River and Conant Creek, eastward to the headwaters of Boone and Conant Creeks, which marks the eastern limits of the infestation. The heaviest infestation

lies between Boone Creek and Conant Creek , where the infested trees are evenly distributed and occur as singles and small groups of as many as eleven trees. Though the remainder of the area contained but a few scattered infested trees, there was an increase in the 1933 infestation from .265 infested trees per acre in 1932 to .318 in 1933, giving an average of 204 trees per section.

#### Unit #18

This unit includes portions of the Granite and Squirrel Creek drainages, which had been previously covered by control. The 1933 infestation, which averages .303 trees per acre, is fairly heavy, and rather evenly distributed throughout the entire acreage of 23 sections, with many small groups being recorded.

#### Unit #19

This unit consists of the untreated area between Conant and Bitch Creeks. The infested trees are scattered throughout the area, and occur nearly always as individual trees, the largest group consisting of three infested trees. The data secured show a decrease in the infestation from .160 infested trees per acre in 1932 to .100 in 1933.

#### Unit #20

This unit consists of the untreated area around Coyote Meadows between Conant and Bitch Creeks. One group of fifteen infested trees was located during the survey. There is an increase from .480 infested trees per acre in 1932 to .579 infested trees in 1933.



# COST OF THE 1933 INSECT SURVEY

## TARGHEE NATIONAL FOREST

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### Wage Scale

Field Assistants (2 men) net -	\$80.00 per month	
Cook-Truck Driver (1 man) net -	\$70.00 " "	
Crew Foreman (1 man) net -	\$100.00 per month	
Total Wages Paid --		\$654.32
Transportation - government owned truck		
Gas and oil -	\$50.02	
Repairs -	<u>10.73</u>	
	60.75	60.75
Subsistence (582 meals @ .444)		167.35
Traveling expenses		<u>57.37</u>
Total cost of survey		\$939.79

Per cent of area surveyed	1-1/4%
Cost per mile of strip	\$1.06
Cost per acre of strip	\$0.134
Cost per section of area surveyed	\$1.34
Cost per acre of area surveyed	\$0.002

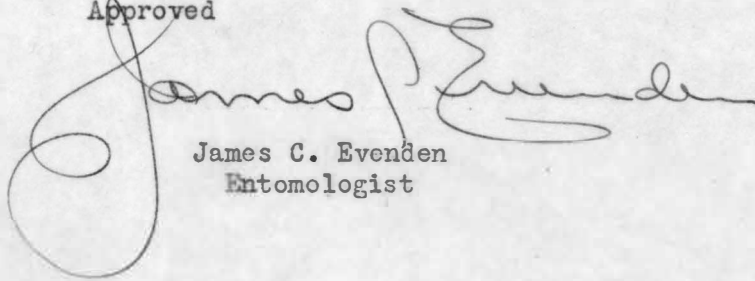
### CONCLUSIONS

The purpose of this report is to depict the present status of the mountain pine beetle infestation in the northern portion of the Targhee National Forest. No attempt has been made to offer recommendations for control, as that task should be undertaken by one of more experience. I wish to take this opportunity of expressing my appreciation for the cooperation and assistance extended by local forest officers, which was of great value.

Respectfully submitted,

Elmer E. Miller  
Assistant Field Aide

Approved

A large, stylized handwritten signature in dark ink, appearing to read 'James C. Evenden'. The signature is written over the printed name and title.

James C. Evenden  
Entomologist



SUMMARY  
INSECT SURVEY 1933  
TARGHEE NATIONAL FOREST

Unit	Acres 1933	Miles of 1-chain sample strip			Per cent of area surveyed			Attacks per acre			New attacks: per section		Estimated new attacks			% Change in infestation			
		1931	1932	1933	1931	1932	1933	1931	1932	1933	1932	1933	1931	1932	1933	1931 to 1932	1932 to 1933	+	-
1	27,660	61.6	42.55	48.9	1.37	1.23	1.41	.14	.651	.769	438	495	5,246	18,836	21,270	259			13
2	53,460	51.7	61.40	88.2	1.02	1.06	1.32	.26	.570	.955	365	611	11,014	26,186	51,054	138			95
3	43,520	71.6	62.50	72.4	1.26	1.14	1.33	.33	.294	.594	165	380	14,506	12,795	25,850		11.8		102
4	28,280	46.9	40.00	45.5	1.22	1.13	1.29	.13	.459	1.305	295	839	4,456	12,980	36,905	191			184
5	48,710	79.0	76.50	77.2	1.26	1.26	1.27	.57	.797	1.446	511	927	28,387	38,822	70,434	36.7			81
5A	15,000		25.00	24.4		1.34	1.30		.054	.174	34	113		810	2,610				222
6	16,360		25.20	10.4		1.21	.52		.044	.627	28	402	480	720	10,258	50			1,325
7	37,120	52.0	58.00	81.9	1.30	1.31	1.76	.04	.050	.151	38	97	1,534	2,193	5,605	43			155
7A			0.50			2.50			.750		480			120					
8	<sup>27,520</sup> <del>5,280</del>	6.7	24.20	44.1	1.3	3.83	6.68	.17	.090	.215	58	138	890	481	<sup>5,926</sup> <del>1,155</del>		46		136
9	17,600	27.0	25.00	33.9	1.25	1.13	1.54	.08	.220	.158	144	101	1,637	3,969	2,781	142			30
10 Treated	12,360	16.7	9.00	34.5	1.24	0.68	2.23	.43	.17	.304	146	195	4,674	1,871	3,757		60		101
10A Untreated		16.0	4.50		1.90	2.12		.18	.56				1,238	957					
11	8,940	18.1	18.00	24.8	1.73	1.60	2.22	.55	.29	.156	184	99	4,986	2,584	1,395		48		46
12	3,200	10.0	9.00	12.0	2.5	2.27	3.00	.37	.11	.500	125	320	1,184	627	1,600		47		155
13A	4,800	10.0	7.25	11.0	1.66	1.21	1.84	.10	.069	.702	44	449	480	334	3,369		30		908
13B			2.50			3.12			.650		416			416					
14	16,600	38.4	38.80	48.8	2.31	1.87	2.35	.21	.058	.212	37	135	3,618	966	3,519		73		264
15	10,275	13.2	19.00	21.8	1.32	1.48	1.69	.24	.360	.609	251	391	1,897	3,706	6,257	95			69
16	19,295	32.5	30.66	37.0	1.34	1.27	1.53	1.07	1.206	1.368	906	880	20,664	23,270	27,257	12.6			13
17	44,500	73.7	71.30	94.6	1.1	1.28	1.70	.16	.265	.318	170	204	8,410	11,784	14,151	40			20
18	14,578	24.62	25.75	23.1	1.2	1.41	1.26	.076	.111	.303	72	192	1,119	1,627	4,417	45			171
19	7,570	12.6	12.50	15.0	1.3	1.32	1.58	.07	.160	.100	103	64	530	1,211	757	128			37
20	6,936	11.9	11.70	7.0	1.2	1.34	0.82	.3	.480	.579	308	365	2,235	3,329	4,016	49			21
	<sup>464,284</sup> <del>442,044</del>	674.2	700.81	856.5	1.29	1.29	1.55	.220	.392	<sup>1.53</sup> <del>.674</del>	<sup>418</sup> <del>455</del>	252	119,185	170,594	<sup>303,188</sup> <del>297,452</del>	43			77 <del>44</del>